

CLAIMS

What is claimed:

1. An isolated nucleic acid comprising the nucleotide sequence of SEQ ID NO: 1 or the complement of SEQ ID NO: 1.
2. The nucleic acid of claim 1 comprising a functional derivative of the nucleotide sequence of SEQ ID. NO: 1.
3. The nucleic acid of claim 2 where the functional derivative is selected from the group consisting of a fragment, and a degenerate variant.
4. The nucleic acid of claim 3 where the functional derivative is a fragment and the fragment comprises a contiguous sequence of at least 15 nucleotides of SEQ ID NO: 1 or the complement of SEQ ID NO: 1.
5. The nucleic acid of claim 3 where the functional derivative is a fragment and the fragment comprises a contiguous sequence of at least 20 nucleotides of SEQ ID NO: 1 or the complement of SEQ ID NO: 1.
6. The nucleic acid of claim 1 comprising a nucleotide sequence which is at least 50% identical to the nucleotide sequence of SEQ ID NO: 1.
7. The nucleic acid of claim 1 comprising a nucleotide sequence which is at least 80% identical to the nucleotide sequence of SEQ ID NO: 1.
8. The nucleic acid of claim 1 comprising a nucleotide sequence which is at least 90% identical to the nucleotide sequence of SEQ ID NO: 1.
9. The nucleic acid of claim 1 comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of SEQ ID NO: 1.
10. The nucleic acid of claim 1 where said nucleotide sequence encodes a polypeptide having the amino acid sequence of SEQ ID NO: 2, a fragment of SEQ ID NO: 2 at least 5 amino acid residue in length, or a degenerate variant of SEQ ID NO: 2.
11. The nucleic acid of claim 1 where said nucleotide sequence encodes a polypeptide having the amino acid sequence of SEQ ID NO: 2 wherein (a) at position 26 the amino acid cysteine is replaced by serine; (b) at position 44 the amino acid cysteine is replaced by serine; or (c) both (a) and (b).
12. The nucleic acid of claim 1 where said nucleotide sequence encodes a polypeptide the amino acid sequence of which is at least 80% identical to SEQ ID NO: 2.

13. An isolated nucleic acid comprising a sequence that hybridizes under highly stringent conditions to a hybridization probe the nucleotide sequence of which consists of SEQ ID NO: 1, the complement of SEQ ID NO: 1, a fragment of SEQ ID NO: 1 at least 15 nucleotides in length or the complement of a fragment of SEQ ID NO: 1 at least 15 nucleotides in length.
14. A purified polypeptide the amino acid sequence of which comprises SEQ ID NO: 2, or a degenerate variant of SEQ ID NO: 2.
15. The purified polypeptide of claim 14 the amino acid sequence of which comprises a fragment of SEQ ID NO: 2 of at least 5 consecutive amino acids.
16. The purified polypeptide of claim 14 the amino acid sequence of which comprises a fragment of SEQ ID NO: 2 of at least 5 consecutive amino acids, wherein said polypeptide is immunologically reactive with an anti-GBS phage lysin antibody.
17. The purified polypeptide of claim 14 the amino acid sequence of which is at least 50% identical to SEQ ID NO: 2.
18. The purified polypeptide of claim 14 the amino acid sequence of which is at least 80% identical to SEQ ID NO: 2.
19. The purified polypeptide of claim 14 the amino acid sequence of which is at least 90% identical to SEQ ID NO: 2.
20. The purified polypeptide of claim 14 the amino acid sequence of which is at least 95% identical to SEQ ID NO: 2.
21. The purified polypeptide of claim 14 the amino acid sequence of which comprises a fragment of SEQ ID NO: 2 selected from the group consisting of residues 1-107, 6-107, 6-443, 1-344, 145-344, 145-443 and 6-344.
22. The purified polypeptide of claim 21 where the polypeptide express at least one of an endopeptidase or a glycosidase activity.
23. The purified polypeptide of claim 14 wherein (a) at position 26 the amino acid cysteine is replaced by serine; (b) at position 44 the amino acid cysteine is replaced by serine; or (c) both (a) and (b).
24. The purified polypeptide of claim 23 where the polypeptide does not express an endopeptidase activity.

25. The purified polypeptide of claim 14 where the polypeptide express an endopeptidase and a glycosidase activity.
26. An expression vector comprising the nucleic acid of claim 1 operably linked to an expression control sequence.
27. A non-human host cell comprising the expression vector of claim 26.
28. A method of producing a GBS phage lysin, the method comprising culturing the host cell of claim 27 under conditions permitting expression of the GBS phage lysin from the expression vector.
29. The method of claim 28 further comprising purifying the GBS phage lysin.
30. A method of treating or preventing a condition caused by a bacteria in an individual in need of such treatment or prevention, the method comprising the step of administering to the individual an effective amount of a therapeutic agent, the therapeutic agent comprising the polypeptide of claim 14 in a pharmaceutically acceptable carrier, said bacteria having a peptidoglycan structure comprising an interpeptide bridge consisting of (L-Ala)₂ or L-Ala-L-Ser.
31. The method of claim 30 where the bacteria is a group B streptococci and the condition is a vaginal colonization of the group B streptococci.
32. The method of claim 31 where the pharmaceutically acceptable carrier is a tampon, pad or a douche.
33. The method of claim 30 where the bacteria are selected from the group consisting of group A streptococci, group B streptococci, group C streptococci, group E streptococci, and group G streptococci.
34. The method claim 30 further comprising the step of administration of a modulating compound in a pharmaceutically acceptable carrier.
35. A method of disrupting the cell walls of a bacteria comprising the step of contacting the bacteria with the protein of claim 14, said bacteria having a peptidoglycan structure comprising an interpeptide bridge comprising (L-Ala)₂ or L-Ala-L-Ser.
36. The method of claim 35 where the bacteria are selected from the group consisting of group A streptococci, group B streptococci, group C streptococci, group E streptococci, and group G streptococci.